REMARKS

Claims 1-13 are pending in the application. It is gratefully acknowledged that Claims 4-6 and 11-13 have been objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. The Examiner has rejected Claims 1-3 and 7-10 under 35 U.S.C. §102 (e) as being anticipated by Jafarkhani et al. (U.S. Patent 6,125,149). The Examiner has objected to Claim 3 under 35 C.F.R. §1.75(c) as being of improper dependent form.

The draftsperson has objected to the drawings for not having lines, numbers and letters of even thickness. A clean set of formal drawings is attached hereto. Withdrawal of the objections is respectfully requested.

Regarding the objection of Claim 3 under 35 C.F.R. §1.75(c), the Examiner states that the recitation of "wherein l is 1" is improper. It appears that the Examiner is misreading the variable letter "l" (lower case "L") as a number "1" ("one"). Withdrawal of the objection is respectfully requested.

Turning now to the rejections of independent Claims 1 and 7 under §102(e), the Examiner states that Jafarkhani et al. discloses all of the elements recited in the claims. Applicants respectfully disagree. Both independent Claims 1 and 7, as amended, each recite the element of the intervals occupying a range of $m \times 2^l$ (l is a positive integer), where m is the transmission signal level of a transmitter. This element is neither disclosed nor taught by Jafarkhani et al. The Examiner relies on Jafarkhani et al., col. 3, lines 50-60, but this section does not disclose the recited element. Based on at least the foregoing arguments, withdrawal of the rejections of Claims 1 and 7 are respectfully requested.

Also, the Examiner refers to col. 6, lines 34-38 of Jafarkhani et al. regarding a quantization method for an iterative decoder as recited in Claims 1 and 7 of the present application, col. 3, lines 50-60 and col. 7, lines 21-24 of Jafarkhani et al. regarding a first step of the Claims 1 and 7, and col. 5, lines 36-38 of Jafarkhani et al. regarding a second step of Claims 1 and 7. As recited in Claims 1 and 7 of the present application, the iterative decoder repeatedly performs a decoding operation by an inner component, whereas the device disclosed in Jafarkhani et al. performs an iterative process by alternating a coding and decoding process. That is, the claims of present application disclose that the decoding operation is performed within the

iterative decoder, however Jafarkhani et al. discloses that a coding operation as well as a decoding operation are performed through a coder ***and*** a decoder. Based on at least the foregoing arguments, withdrawal of the rejections of Claims 1 and 7 are respectfully requested.

In general please consider the following analysis. Referring to a decoder using an iterative decoding scheme, the input and output of the decoder is based on soft-input/soft-output (for example, 0.765 → polarity + confidence measurement). That is, the decoder decodes exactly the received signals, as compared with other decoder configurations, since the decoding (especially, iterative decoding) is performed with quantized data including confidence measurement as well as the polarity. In the case of an iterative decoder emphasizing the confidence measurement, the decoding is performed in the typical manner wherein the signals outside of the transmission signal range (-A to +A) are mapped to the highest (+A) and the lowest (-A) without distinction of signals. Seriously degraded performance can occur.

To solve the above performance degradation, the present application discloses that the iterative decoder performs a decoding operation with the quantized data based on the extended quantization range as compared with the transmission signal range. In addition, and as disclosed in the present application, an optimal quantization bit (QB) is determined on the basis of the extended quantization range, and the number of internal signal expression bits in a component decoder is determined in consideration of the input dynamic range according to an internal metric calculation. The device claimed in the present application optimizes the required parameters upon quantization in the iterative decoder.

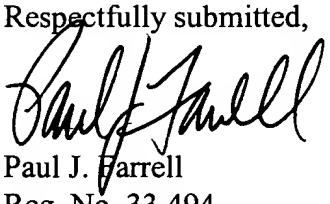
In view of the foregoing point, Fig. 1 of the present application illustrates the prior art where the quantization range is determined by the range of transmission signal levels (-A to +A). Fig. 2 of the present application shows that the quantization range can be extended beyond the transmission signal range, as claimed in Claims 1 and 7. Also, the specification of the present application discloses a newly defined parameter (a range of the quantization and the number of optimal quantization bit based on the quantization range), thus extending the range of the quantization. See Figs. 3 to 5 of the present application. Again, based on at least the foregoing arguments, withdrawal of the rejections of Claims 1 and 7 are respectfully requested.

Independent Claims 1 and 7 are believed to be in condition for allowance. Without conceding the patentability per se of dependent Claims 2, 3 and 8-10, these are likewise believed

to be allowable by virtue of their dependence on their respective amended independent claims. Accordingly, reconsideration and withdrawal of the rejections of dependent Claims 2, 3 and 8-10 is respectfully requested.

Accordingly, all of the claims pending in the Application, namely, Claims 1-13, are believed to be in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicant's attorney at the number given below.

Respectfully submitted,



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